STANDARD PHRASEOLOGY

SECTION E

1. This section of standard phraseology is for general use in mechanical disciplines.

Disassemble each _____, using 2.__ for guidance.

E1a

Disassemble each _____ in accordance with 2.__.

E1b

E2 PHRASE DELETED

E3 PHRASE DELETED

NOTE: USE AS A SUBPARAGRAPH WHEN DISASSEMBLY IS INVOKED.

Measure and record sizes and clearances of each _____, using 2.__ for guidance.

E4a

Measure and record sizes and clearances of each _____ in accordance with 2.__.

E4b

NOTE: USE FOR NONCRITICAL EQUIPMENT (GENERAL USE).

Include sizes and clearances for wearing parts, bearing surfaces, thrust and journal bearings, seal and packing areas, and physical conditions of parts not specified for renewal.

E4c

NOTE: USE FOR MISSION CRITICAL EQUIPMENT, ESPECIALLY FORCED DRAFT BLOWERS, MAIN FEED PUMPS, MAIN PROPULSION TURBINES, ETC.

Include sizes, clearances, fits, and finishes for wearing parts, bearing surfaces, thrust and journal bearings, seal and packing areas, and physical conditions of parts not specified for renewal.

E4d

NOTE: USE E5a AS A SUBPARAGRAPH WHEN DISASSEMBLY IS INVOKED.

Inspect each part for wear and defects, using 2.__ as guidance for accept or reject criteria.

E5a

Inspect each part for wear and defects, using 2.__ for accept or reject criteria.

E5b

Remove test fluid and dry the _____ interior and exterior surfaces. Allowable residual fluid: None.

E6

Straighten each _____ to within _____ inch total indicator reading.

E7

Straighten each shaft to within _____ inch total indicator reading.

E8

Straighten operating levers, linkages, and eccentrics to provide freedom of operation.

E9

NOTE: FOR REFERENCE USE DOD-STD-2182, ENGINEERING CHROMIUM PLATING (ELECTRODEPOSITED) FOR REPAIR OF SHAFTING (METRIC). ***FOR NDT TESTING, USE B26a-B26b.***

Chrome-plate each _____ journal in accordance with 2.__.

E10

Machine each _____, using 2.__ for guidance.

E11a

Machine each _____ in accordance with 2.__.

E11b

Machine each new undersize casing wearing ring and each new oversize impeller wearing ring to sizes specified in 2.__.

E12a

NOTE: USE ***E12b-E12c*** FOR IMPELLERS WITHOUT WEARING RINGS.

Machine each new impeller wearing ring area concentric to the impeller bore within 0.001 inch total indicator reading, removing only material required to correct out-of-round and eccentric conditions.

E12b

Machine each new undersize casing wearing ring bore concentric to casing wearing ring area to sizes specified in 2.__ for the mating impeller wearing surfaces.

E12c

NOTE: USE ***E12d-E12e*** FOR IMPELLERS WITH OVERSIZED WEARING RINGS.

Machine each new impeller wearing ring concentric to the impeller bore within 0.001 inch total indicator reading, removing only material required to correct out-of-round and eccentric conditions.

E12d

Machine each new casing wearing ring bore concentric to casing wearing ring area to sizes specified in 2.__ for the mating impeller wearing ring surfaces.

E12e

Machine each new impeller wearing ring, using 2.__ for guidance.

E13a

Machine each new impeller wearing ring in accordance with 2.__.

E13b

Machine each new casing wearing ring, using 2.__ for guidance.

E14a

Machine each new casing wearing ring in accordance with 2.__.

E14b

Fit each wearing ring to corresponding groove in upper and lower casings.

E15

Inspect wearing ring fit. Rings shall not bind and tolerance shall be in accordance with 2.__.

E16

Stone both faces of each thrust collar to remove high spots.

E17

Stone each _____ journal to remove high spots.

E18

Stone each pinion and gear tooth to remove high spots.

E19

NOTE: WHEN E20 IS USED, E21 SHALL ALWAYS BE A SUBPARAGRAPH. SPECIFY LABYRINTH OR CARBON PACKING.

Scrape, lap, and fit metal-to-metal joints of each turbine packing box, turbine case, turbine case cover, nozzle, steam chest, steam strainer, and steam strainer cover.

E20a

Lap and fit metal-to-metal joints of each _____.

E20b

Hand fit and restore the contact between exposed metal-to-metal, steamtight joints.

E20c

Machine, hand fit, and restore the contact between exposed metal-to-metal, steamtight joints.

E20d

Machine, hand fit, and restore the contact between exposed metal-to-metal and gasket seating surfaces, using 2.__ for guidance.

E20e

Inspect contact using blueing method. Contact shall be _____ percent, with a continuous band of contact _____ wide between inner bolting perimeter and the sealing surface pressure source.

E21a

Inspect contact using blueing method. Contact shall be a minimum of _____ percent of total surface area, including a minimum of _____ percent continuous contact across the pressure sealing surfaces.

E21b

Inspect contact using blueing method. Contact shall be a minimum of _____ percent of total surface area, including a continuous band with a minimum width of _____ percent of the distance from the pressure source to the inner bolting perimeter.

E21c

NOTE: FOR PUMPS WITH IMPELLER WEARING RINGS

Inspect each assembled pump rotating assembly for concentricity to the shaft axis. Eccentricity at each bearing shaft sleeve and wearing ring mating area shall not exceed _____ inch total indicator reading.

E22

NOTE: USE FOR MINOR REPAIRS.

Restore mating surfaces exposed by _____ removal. Repair by removing high spots, burrs, abrasions, and foreign matter, where removal can be accomplished by hand tools.

E23a

Remove high spots, burrs, abrasions, nicks, corrosion, gasket material, and foreign matter from exposed flanges and mating surfaces.

E23b

Remove burrs and high spots from exposed sliding surfaces, screw threads, keys, and keyways.

E23c

Assemble each _____, using 2.__ for guidance.

E24a

Assemble each _____ in accordance with 2.__.

E24b

Assemble, install, align, adjust, and connect _____, fitting and installing new _____ and the following new parts in accordance with 2.__:

E24c

Measure and record final sizes and clearances, using 2.__ for guidance.

E25a

Measure and record final sizes and clearances in accordance with 2.__.

E25b

Adjust and set the height of each worm gear, using 2.__ for guidance.

E26a

Adjust and set the height of each worm gear in accordance with 2.__.

E26b

E26c PHRASE DELETED

Verify mesh alignment and contact, using blueing method.

E26d

Thrust faces shall be square with shaft axis to within _____ inch total indicator reading.

E27

E28a PHRASE DELETED

E28b PHRASE DELETED

E29a PHRASE DELETED

E29b PHRASE DELETED

E29c PHRASE DELETED

Manually rotate each shaft prior to installation of pump shaft packing. Rubbing or binding of the rotating assembly not allowed.

E30a

Rotate shaft by hand one complete revolution. Binding or rubbing of the rotating assembly is not allowed.

E30b

NOTE: USE E31 AS A SUBPARAGRAPH WHEN SECURING DETAILS ARE INVOKED.

Apply antiseize compound conforming to MIL-PRF-907 on high temperature fasteners.

E31

NOTE: FOR TURBINE SEALING SURFACES.

Apply triple boiled linseed oil conforming to TT-L-201, Type II, with a viscosity of Z-8 or Z-9 on metal-to-metal steam joints.

E32a

Apply high temperature sealing compound conforming to MIL-S-15204, Type C, on each _____.

E32b

NOTE: FOR REDUCTION GEAR, BEARING AND COUPLING COVERS.

Apply sealant conforming to MIL-S-45180, Type 2, on the metal-to-metal joints of each _____.

E33

NOTE: FOR STEAM AND STEAM DRAINS (150 PSIG - 400 DEGREES FAHRENHEIT).

Remove existing and install new steam piping joint gaskets and fasteners. Gaskets shall conform to HH-P-46. Fasteners shall conform to MIL-DTL-1222, Type I, Grade 400 or 405, Class A or B, QQ-N-281, nickel-copper alloy.

E34

NOTE: FOR STEAM AND STEAM DRAINS (600 PSIG - 875 DEGREES FAHRENHEIT) (1500 PSIG - 1000 DEGREES FAHRENHEIT).

Remove existing and install new steam piping joint gaskets and fasteners. Gaskets shall conform to MIL-G-24716. Fasteners shall conform to MIL-DTL-1222, Type IV, Grade 4, alloy steel. Fasteners shall have protective coating per MIL-C-81751, Type I, Class 4.

E35

NOTE: FOR STEAM AND STEAM DRAINS (1500 PSIG - 775 DEGREES FAHRENHEIT) (600 PSIG - 775 DEGREES FAHRENHEIT) (150 PSIG - 775 DEGREES FAHRENHEIT).

Remove existing and install new steam piping joint gaskets and fasteners. Gaskets shall conform to MIL-G-24716. Fasteners shall conform to MIL-DTL-1222, Type IV, Grade B-7, alloy steel. Nuts shall conform to MIL-DTL-1222, Type I, Grade 5, carbon steel. Fasteners shall have protective coating per MIL-C-81751, Type I, Class 4.

E36

NOTE: FOR PROPULSION PLANT SATURATED FEED SYSTEM (600 TO 2050 PSIG - 300 DEGREES FAHRENHEIT).

Remove existing and install new feedwater piping joint gaskets and fasteners. Gaskets shall conform to MIL-G-24716. Fasteners shall conform to MIL-DTL-1222, Type I, Grade 5, carbon steel. Fasteners shall have protective coating per MIL-C-81751, Type I, Class 4.

E37

E38 PHRASE DELETED

NOTE: FOR FRESH WATER - CHILLED WATER, FEEDWATER AND CONDENSATE (100 PSIG - 250 DEGREES FAHRENHEIT) i.e., UNAFLEX TYPE 96, 87, OR 94.

Remove existing and install new fresh water piping joint gaskets and fasteners. Gaskets shall conform to _____, _____, _____. Fasteners shall conform to MIL-DTL-1222, Type I, Grade 400 or 405, Class A or B, QQ-N-281, nickel-copper alloy.

E39

NOTE: FOR SALT WATER, INCLUDING SUCTION SEA CHEST STEAM OUT CONNECTIONS (50 PSIG - 150 DEGREES FAHRENHEIT) (250 PSIG - 150 DEGREES FAHRENHEIT).

Remove existing and install new salt water piping joint gaskets and fasteners. Gaskets shall conform to UNAFLEX, Type 96 or 87. Type 94 or Type 95, AMS-G-6855 Grade I, Class 80, or MIL-G-22050, Grade 2 or 3, are to be used for suction sea chest steam out connections. Fasteners shall conform to MIL-DTL-1222, Type I, Grade 400 or 405, Class A or B, QQ-N-281, nickel-copper alloy.

E40

NOTE: FOR SALT WATER (50 PSIG - 150 DEGREES FAHRENHEIT) (250 PSIG - 150 DEGREES FAHRENHEIT).

Remove existing and install new salt water piping joint gaskets and fasteners. Gaskets shall conform to UNAFLEX, Type 87 or Type 96. Fasteners shall conform to MIL-DTL-1222, Type I, Grade 400 or 405, Class A or B, QQ-N-281, nickel-copper alloy.

E41

NOTE: FOR FUEL OIL (600 PSIG - 775 DEGREES FAHRENHEIT) (1200 PSIG - 775 DEGREES FAHRENHEIT).

Remove existing and install new fuel oil piping joint gaskets and fasteners. Gaskets shall conform to MIL-G-24716. Fasteners shall conform to MIL-DTL-1222, Type IV, Grade B-7, alloy steel. Nuts shall conform to MIL-DTL-1222, Grade 5. Fasteners shall have protective coating per MIL-C-81751, Type I, Class 4.

E42

NOTE: FOR DIESEL FUEL OIL (200 PSIG - 300 DEGREES FAHRENHEIT).

Remove existing and install new fuel oil piping joint gaskets and fasteners. Gaskets shall conform to MIL-G-24716. Fasteners shall conform to MIL-DTL-1222, Grade 5, carbon steel. Fasteners shall have protective coating per MIL-C-81751, Type I, Class 4; MIL-C-87115, Class 3; MIL-DTL-83488, Type II, Class 3; or ASTM B633, Type II, Class 13.

E43a

NOTE: FOR GAS TURBINE POWERED SHIPS FUEL OIL (200 PSIG - 300 DEGREES FAHRENHEIT).

Remove existing and install new fuel oil piping joint gaskets and fasteners. Gaskets shall conform to MIL-G-24716. Fasteners shall conform to MIL-DTL-1222, Type I, Grade 400 or 405, Class A or B, QQ-N-281, nickel-copper alloy.

E43b

NOTE: FOR LUBRICATING OIL (50 PSIG - 180 DEGREES FAHRENHEIT) i.e., HH-P-151, CLASS I, CLOTH INSERTED RUBBER, MIL-PRF-1149, TYPE II, CLASS I, SYNTHETIC RUBBER.

Remove existing and install new lubricating oil piping joint gaskets and fasteners. Gaskets shall conform to _____, _____, _____. Fasteners shall conform to MIL-DTL-1222, Type I, Grade 2, carbon steel. Fasteners shall have protective coating per MIL-C-81751, Type I, Class 4; MIL-C-87115, Class 3; MIL-DTL-83488, Type II, Class 3; or ASTM B633, Type II, Class 13.

E44

NOTE: FOR LUBRICATING OIL (150 PSIG - 250 DEGREES FAHRENHEIT).

Remove existing and install new lubricating oil piping joint gaskets and fasteners. Gaskets shall conform to MIL-G-24716. Fasteners shall conform to MIL-DTL-1222, Type I, Grade 5, carbon steel. Fasteners shall have protective coating per MIL-C-81751, Type I, Class 4; MIL-C-87115, Class 3; MIL-DTL-83488, Type II, Class 3, or ASTM B633, Type II, Class 13.

E45

NOTE: FOR INSTALLATION OF NEW HOLD-DOWN BOLTING FOR MACHINERY WHERE SELF-LOCKING NUTS ARE NOT REQUIRED.

Remove existing and install new hold-down bolts and nuts conforming to MIL-DTL-1222, Type III, Grade 5, alloy steel. Fasteners shall have protective coating per ***MIL-DTL-83488, Type II, Class 2, or ASTM B633, Type II, Class 12.***|

E46

NOTE: FOR INSTALLATION OF NEW HOLD-DOWN BOLTING FOR MACHINERY WHERE SELF-LOCKING NUTS ARE REQUIRED. IDENTIFY TYPE OF MATERIAL FOR SELF-LOCKING NUTS.

Remove existing and install new hold-down bolts conforming to MIL-DTL-1222, Type III, Grade 5, and self-locking nuts conforming to NASM-25027, _____. Fasteners shall have protective coating per ***MIL-DTL-83488, Type II, Class 2,*** | ***or ASTM B633, Type II, Class 12.***

E47

Install new aluminized cloth spray shields on _____ piping and valve flanges and components in accordance with ASTM F1138.

E48

Fill each _____ to the full mark with new _____ conforming to _____.

E49

Allowable leakage at new and disturbed joints: None.

E50

NOTE: NICKEL COPPER ALUMINUM (K-MONEL) BOLTING OF SEA VALVES AND PIPE JOINTS - SHALL BE USED ON INBOARD AND OUTBOARD FLANGES AND BONNET JOINTS WHERE INTEGRITY OF THE HULL AGAINST THE SEA IS CONCERNED; ALSO WHERE VALVES ARE NOT READILY ACCESSIBLE FOR INSPECTION OR MAINTENANCE, i.e., HH-P-46, CLASS I, COMPRESSED ASBESTOS. MIL-G-24716, GASKET, METALLIC-FLEXIBLE GRAPHITE, SPIRAL WOUND or ANSI B16.20.

Remove existing and install new gaskets and fasteners. Gaskets shall conform to _____, _____, _____. Fasteners shall conform to MIL-DTL-1222, Type I, Grade 400 or 405 nickel copper.

E51

NOTE: INVOKE APPLICABLE 009-12 REQUIREMENTS.

Weld build-up the cracked, worn, and eroded areas of each _____ and machine to original dimensions and contours in accordance with 2.__.

E52a

Weld build-up the cracked, worn, and eroded areas of each _____ and machine to original dimensions and contours, using 2.__ for guidance.

E52b

Handwork and skim cut machined, sealing, aligning, mating, and gasket surfaces.

E53

E54 PHRASE DELETED

NOTE: SPECIFY TYPE OF MATERIAL AND MIL-SPEC.

Install and fit new chocks and shims conforming to _____ to accomplish alignment.

E55a

NOTE: FOR PUMPS AND TURBINES, SHIMS SHALL CONFORM TO SAE-AMS-QQ-S-763, CRES, GRADE 304.

Install and fit new shims conforming to _____ to accomplish alignment.

E55b

Drill and ream foundations. Fit and install new dowels.

E56a

NOTE: SPECIFY TYPE OF MATERIAL.

Drill and ream foundations. Fit and install new _____ dowels in each unit to retain unit alignment.

E56b

E57 PHRASE DELETED

E58 PHRASE DELETED

NOTE: TO MINIMIZE THE POSSIBILITY OF STRAINER BAG RUPTURE THE USE OF NYLON VICE MUSLIN FILTER BAGS (BECAUSE OF THEIR GREATER STRENGTH) IS RECOMMENDED.

Install new nylon filter bags in each strainer. Filter bags shall be of continuous filament nylon cloth, scoured finish, 80 by 80 thread, 75 to 100 micron fiber thickness, 125 to 200 micron holes in cloth.

E59a

NOTE: FOR USE IN LUBE OIL SYSTEMS WHERE RUPTURE OF FILTER BAG IS NOT PROBABLE.

Install new cotton muslin filter bags with material conforming to CCC-C-432, Type 7, Class One, in each strainer.

E59b

E60 PHRASE DELETED

E61a PHRASE DELETED

E61b PHRASE DELETED

E61c PHRASE DELETED

Chase and tap exposed threaded areas.

E62

E63 PHRASE MOVED TO F40

Install new coupling assembly and keys on each _____.

E64a

Bore each coupling hub concentric and to size of shaft diameter within 0.001 inch total indicator reading and perpendicular to the face within 0.001 inch.

E64b

Cut keyways in each new coupling and fit new keys to the mating shafts and coupling hubs.

E64c

(V)(G) "FINAL ALIGNMENT"

Align each coupling concentric to within ___ inch total indicator reading and parallel to within ___ inch gaged at the major diameter of the coupling face.

E64d

Inspect each bearing stave prior to installation aboard ship by probing with a pen knife or similar device at the rubber-metal interface around the total periphery of the stave to locate any unbonding of rubber from metal. A total cumulative length of unbonding greater than one inch, or any unbonding of any length allowing the knife blade to be inserted deeper than one-fourth inch, shall be cause for rejecting the stave.

E65

Measure crankshaft deflection in accordance with 2.__.

E66

Machine each brake drum a minimum amount to remove scoring, pitting, and eccentricity. Each drum shall be concentric to the drum bore within _____ inch total indicator reading.

E67

Clean each sump free of foreign material.

E68

Hone each _____ to remove glazing, scoring, and ridging.

E69

E70 PHRASE DELETED

E71 PHRASE DELETED

NOTE: USE THE FOLLOWING WHEN CLEANING STEAM TURBINE INTERNALS i.e., ROTORS, BLADING, CASING INTERNAL SURFACES.

Blast clean each _____ with non-erosive cleaning agent.

E72a

Cleaning agent shall be aluminum oxide with a particle size no coarser than 220 grit. Other cleaning agents such as glass beads, ash, and walnut shells are acceptable provided that the resultant finish is equivalent to that provided by 220 grit or finer aluminum oxide. The use of sand is prohibited.

E72b

Protect each machined surface against the action of the cleaning agent.

E72c

Measure runout of each _____ shaft using dial indicator.

E73

Assemble each pump rotating assembly, using 2.__ for guidance.

E74

Clear each gage line and fitting free of foreign matter and obstructions.

E75

E76a PHRASE DELETED

E76b PHRASE DELETED

NOTE: FOR USE WITH A13 AND F40 WHEN LOA/PEB RELATED.

Calibration shall be accomplished within _____ days preceding the scheduled LOA lock-out date.

E77

Install new hold-down bolts and nuts conforming to MIL-DTL-1222, Type _____, Grade _____, and steel self-locking hexagon nuts conforming to NASM-25027.

E78

NOTE: FOR REFERENCE USE DOD-STD-2188, BABBITTING OF BEARING SHELLS (METRIC) AND DOD-STD-2183, BOND TESTING, BABBITT LINED BEARINGS.

Rebabbit each _____ bearing in accordance with 2.__.

E79a

Cast each bearing.

E79b

Machine each bearing _____.

E79c

Accomplish ultrasonic testing of each bearing in accordance with 2.__.

E79d

E80 PHRASE DELETED

E81 PHRASE DELETED

Polish each _____ to a _____ root mean square average for roughness.

E82

Align each motor and compressor pulley to within _____ inch parallel alignment. Belts shall depress _____ inch at a point midway between the pulleys.

E83

Inert system with a positive pressure of 2 PSIG, using dry, oil-free nitrogen and a nitrogen regulator.

Install relief valve downstream of nitrogen regulator and set at 5 PSIG.

E84

E85 PHRASE DELETED

NOTE: SPECIFY TYPE OF MATERIAL.

Drill and ream foundations. Fit and install new _____ dowels in each unit. The dowels shall be located in accessible locations for ease of removal that will retain unit alignment.

E86

Clear and clean pockets and passages free of obstructions and foreign matter.

E87

Test each remote valve operator assembly for ease of operation and proper alignment by opening and closing each valve from its remote operating station through three complete cycles. Allowable binding: None.

E88

NOTE: FOR USE ON NON-PRESSURE BOUNDARY APPLICATIONS SUCH AS COUPLING TAPER FITS, SPOTTING IN FOUNDATION LINERS, OR OTHER GENERAL APPLICATIONS WHERE BLUE CHECK IS APPROPRIATE.

Inspect contact between _____ and _____ using the blueing method. Contact shall be a minimum of ___ percent, evenly distributed over the contact surfaces.

E89